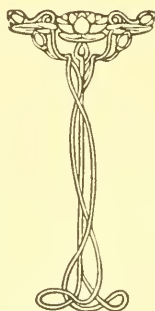


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The Paper Box Making Industry in Philadelphia



ISSUED BY
THE EDUCATIONAL COMMITTEE
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PRESENTED TO
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THE IMPORTANT POSITION OCCUPIED BY THE PAPER BOX.

It is probable that very few people, upon receiving an article packed in a paper box, stop to consider the importance of this modest container or the size and importance in our community of the Paper Box Industry.

Though often discarded and receiving slight attention the paper box has today assumed a place of tremendous importance in the marketing of products of almost every description from tacks to candy and from socks to silk hats.

Not only are paper boxes necessary to protect the goods packed in them from becoming soiled or otherwise damaged, but they are equally necessary and important as a guarantee of the character or quality of the contents. The use of trade-marked or generally known paper boxes also prevents unscrupulous dealers from substituting inferior articles in place of those asked for by the purchaser.

The improvement and development in merchandising methods is evidenced in all lines by the increasing attractiveness of the containers in which the goods are packed.

In days gone by the purchaser of an article was content to receive it wrapped in paper or placed in a bag, but not so today. The critical public when making a purchase must now have the goods delivered in a box, clean, well made and indeed often a work of art in itself. To such an extent has the paper box become a real factor in making sales that today every user of boxes is competing with his rival for the honor and increased business resulting from the more attractive packages. This unquestionable point, of the package actually selling the goods, in some lines has been so forcibly driven home that the manufacturers of these articles actually employ artists and designers to work up in the most painstaking way the boxes in which their goods will be displayed and sold to the consumer. Probably the confectionery business affords the best and most familiar example of the demand for fine paper boxes and the importance which the candy makers attach to the selection of their packages proves that the box is more than a mere container for the candy and is in reality the silent salesman. The same thing is true of an ever-increasing number of articles sold to a discriminating public, who will no longer accept their purchases in common and unattractive packages.

GROWTH AND DEVELOPMENT OF THE INDUSTRY.

The Paper Box Industry is an important one, and it is interesting to know that there are in Philadelphia alone some sixty factories devoted exclusively to the manufacture of paper boxes and employing over 5000 hands with an average weekly pay roll amounting to nearly \$41,000. These factories, with their equipment represented, in 1916, an investment of \$4,000,000 and produced daily approximately 2,000,000 boxes which were sold for the yearly sum of \$8,000,000.*

The evolution and development from the few simple boxes of the past to the artistic packages of the present with an ever-increasing demand was caused by and is causing constant changes in the methods of manufacture.

In the early days of the box-making industry there were no power machines and the few machines then used were operated by hand. Indeed many of the simpler and smaller boxes were made in the homes of the workers, the whole family at times taking part in the work. The manufacturer would distribute the cut stock by wagon or push cart to the homes, at the same time collecting the finished boxes which had been made from stock previously delivered. This method allowed the box maker to carry on his business without the necessity of a large building or the supervision and overhead expenses otherwise necessary. But these primitive methods limited production and made the price too high for the universal use of boxes, such as we see today.

Gradually, however, better methods and the rapid development of machinery, working hand in hand with an increasing market, forced the production of boxes on a quantity basis and a new era set in. Thenceforth the invention of new machinery and the development of better grades of boxes, for commercial uses, became very rapid and in turn caused the growth of other industries to supply the box makers. So today we find a tremendous investment in factories supplying machinery and materials solely for the manufacture of paper boxes.

There are in machines, alone, some thirty-five different kinds, at least eight of which are necessary for the production, in any considerable quantity, of even the plainest covered boxes, while most or all of the various machines are required to manufacture the high-grade and fancy boxes used for such things as candy, etc.

The materials for paper boxes are almost endless in number, beginning with the basic raw material, "box board," which is the body of the box, on through the great variety of cover papers, printed wraps, lace papers, glue and paste, stay paper, cotton, etc., and ending with the beautiful hand painted pictures or wraps and the silk or satin ribbons used to complete the decorative effects.

*Figures here given were gathered for the year 1916.

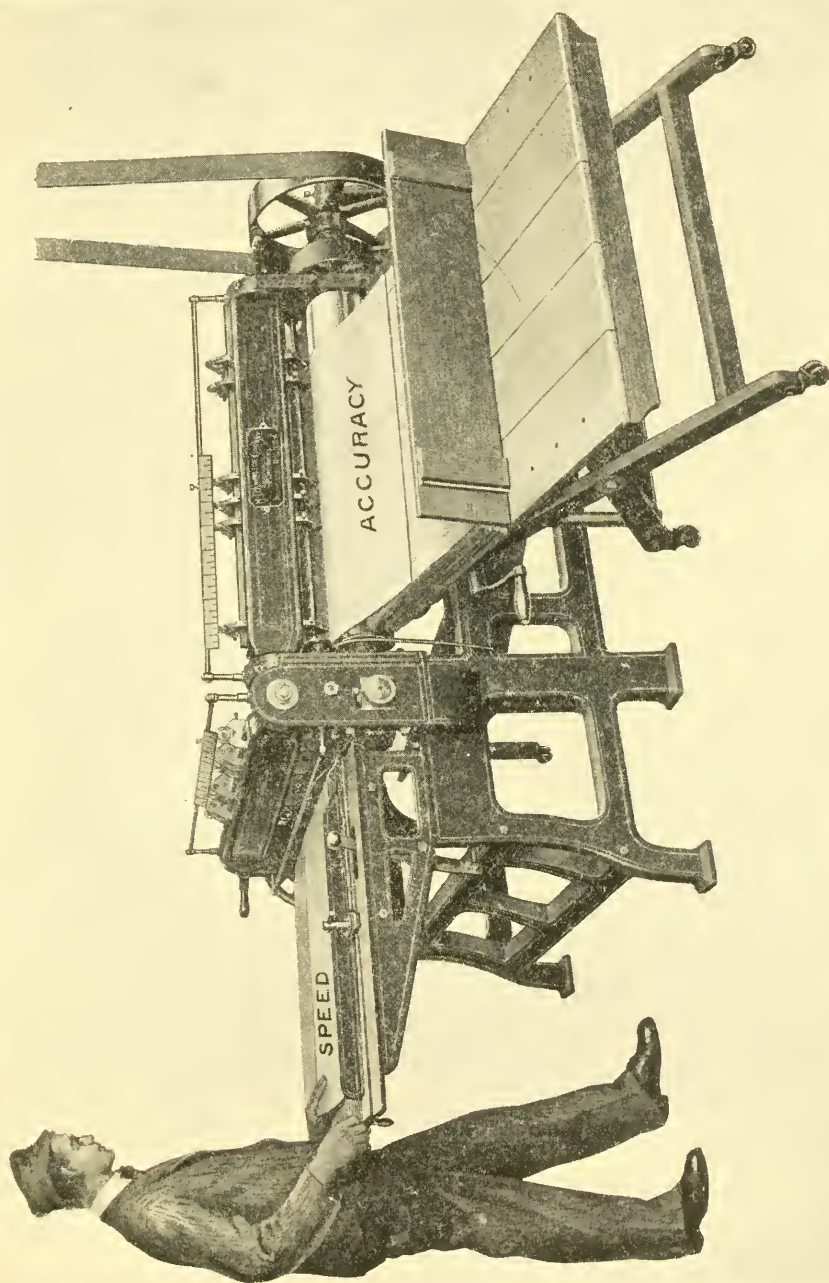


Fig. 1. A Scoring Machine is used to cut the box from the sheet of box-board

HOW BOX BOARD IS MADE.

It will be interesting to turn aside for a moment to the materials and processes used in manufacturing the basic raw material of all boxes, "box board." Of this there are three principal kinds as follows: "News Board," made from old newspapers; "Chip Board," made from all kinds of paper waste, and "Straw Board," manufactured from straw.

"Chip Board," being the most commonly used material, will serve to describe very briefly the conversion of waste paper into the finished box board of various thicknesses or weights.

Into a beater, partly filled with water and coloring matter and equipped with revolving arms, which tear the stock into small particles, is thrown waste paper of all kinds. From the beater this semi-liquid mass is pumped to the Jordan engine where the stock is again ground into finer particles. From here it goes to the stuff chest or storage tank, whence it flows upon a wire screen, which is the beginning of the board machine proper. The thickness of the sheet of board is determined by the amount of material allowed to flow on to this screen in a given time. The screen is agitated or shaken in a horizontal direction to drain off the surplus of water and knit the remaining fibre together. From this screen the mass is carried in a solid layer on to a traveling felt blanket which carries it again to the drying cylinders. These cylinders are a series of heated drums or hollow rolls filled with steam, which extend one after another in close succession about 300 feet and are for the purpose of drying out the board. Upon leaving the last cylinder the stock passes to the finishing calendar which is a series of steel pressure rolls between which the board interwinds. This gives the board a smooth finish, the smoothness depending upon the pressure of the calendar rolls. Passing from the calendar the board is slit into widths, sheeted into desired lengths and tied into bundles weighing fifty pounds each.

Lastly, a white or colored paper, when desired, may be pasted to one surface of the sheet, this afterward appearing as the inside lining of the finished box.

THE MAKING OF A PAPER BOX.

Having decided upon the proper measurements, length, width and depth, together with complete specifications covering all the details of paper, printing, inside parts, etc., the actual manufacture of the box is commenced. Let us follow a box through the developing processes with a brief description of each.

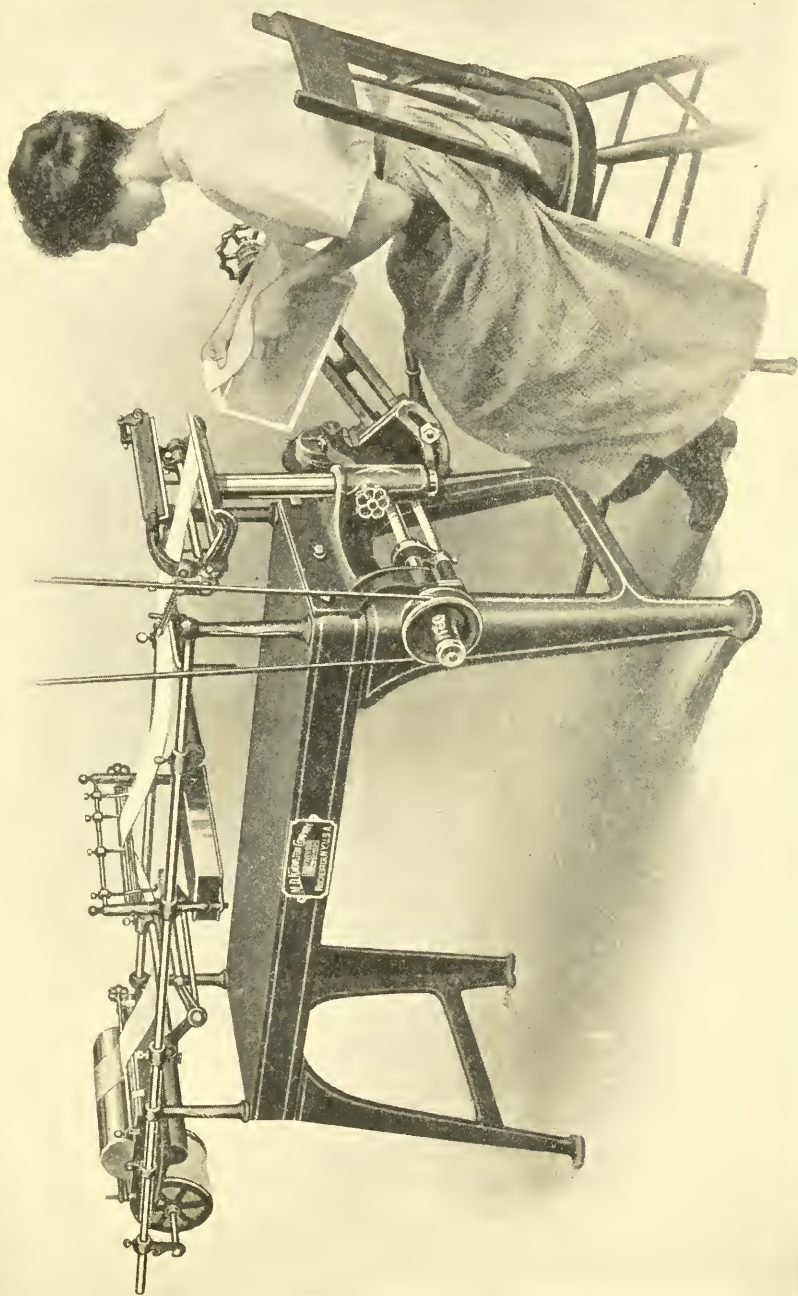


Fig. 2. In the Covering Machine rolls of paper of the proper width are drawn over a glued roller and attached to the sides of the box

A "Scoring Machine" is used to cut the box or lid "blank" from the sheet of box board and as many can be cut from this sheet as the length or width of the blank will divide into the dimensions of the sheet of board. The rotary knives on the "Scoring Machine" are now set at the proper distances apart so as to cut and score the sheet into the blanks as shown in Fig. 1. The corners of the blanks are then cut out on the "Corner Cutting Machine" and the sides or edges of the blank are bent up to form the sides of the box. At each corner a piece of strong Kraft paper or Stay paper, as it is called, is attached by means of the "Staying Machine," so that the corners of the box are held together. The blank has now taken definite form and the box or lid, as the case may be, is ready for covering with paper of the desired quality and color.

The cover paper can be put on in several ways. If manufactured and finished in rolls the roll may be cut down or "slit" into smaller rolls of the proper width which are placed on the "Covering Machine" reel and the paper drawn as a continuous strip over a glued roller, Fig. 2, and attached to the sides and top of the box or lid. This is the "Covering Machine" method. Or else the covering may be carried out by means of the Stokes & Smith Wrapping Machine, Fig. 3. The latter is a very interesting machine in its operation and almost human in the results accomplished. The wrap or cover paper is passed through glue rolls, only one side of the paper receiving a thin coating, and placed glue side up on a revolving table. From this the machine operator picks off the wrap with one hand, at the same time with the other hand taking an uncovered box which she immediately places bottom down on the glued wrap, care being taken to have it accurately centered. The box is then lifted on to a close-fitting form which passes, with wrap partly attached to the box, down and through a series of brushes and rolls which draw the wrap closely to the sides of the box, neatly folding the paper at the corners and ends and turning the edges into the inside of the box. Thus the box emerges from the machine, at the end of a complete revolution, in a finished condition, so far as the covering is concerned. If a simple one the box and lid may be made in this fashion and considered complete, but the more complicated boxes pass on to other processes, perhaps to have a "neck" inserted. This neck is a part consisting of joined sides and ends but no bottom. It is deeper than the box so that it extends above the box sides and is for the purpose of fitting into the lid so that when lidded the sides of the box and lid are flush. This style of box is familiar to all.

Many boxes are fitted with flies or laces, which are the plain or

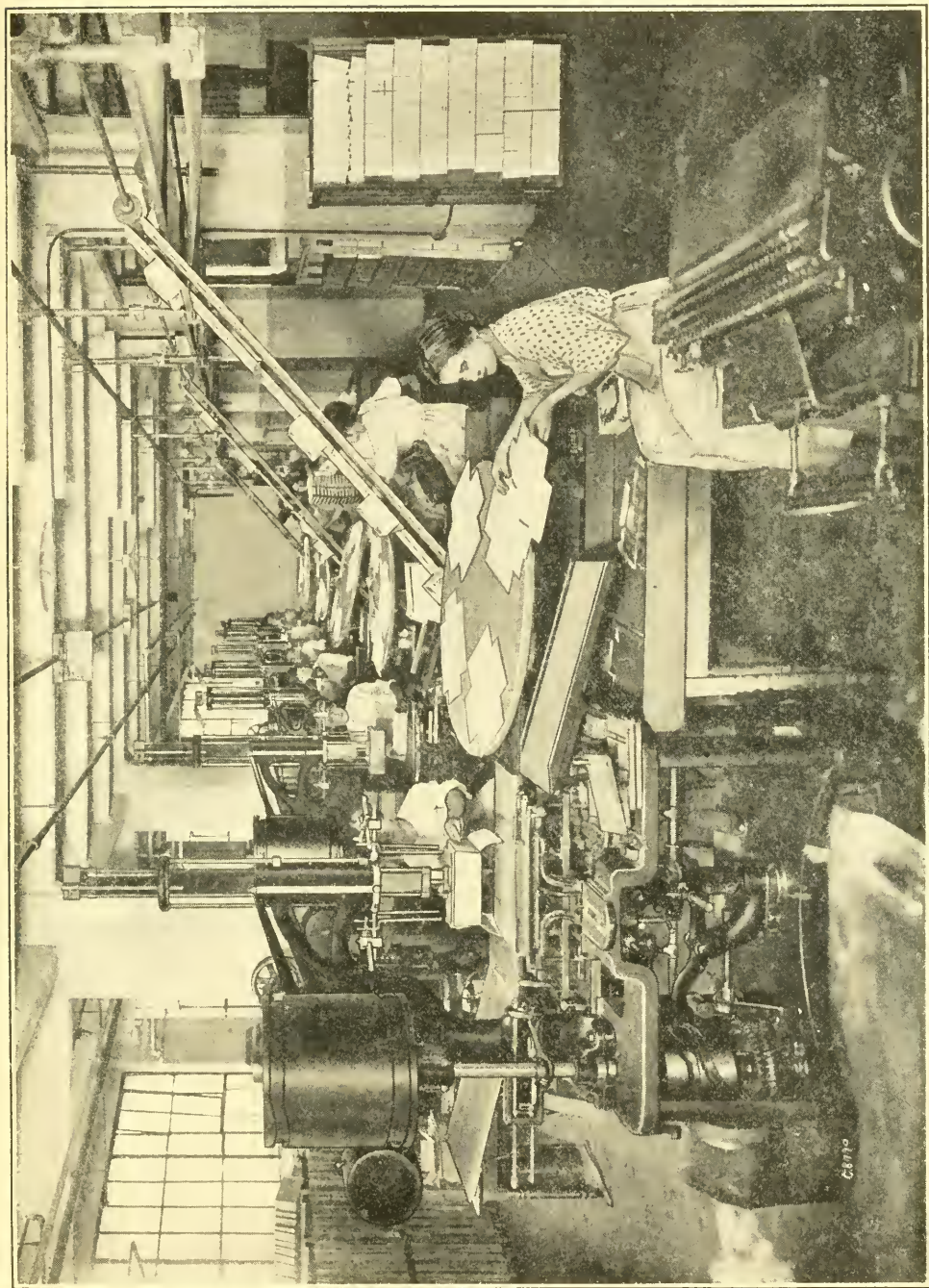


Fig. 3. The Wrapping Machine is almost human in the results obtained

fancy papers glued to the inner edges of the box and laying over the goods when the box is packed. These are glued in either by hand or machine, according to which method the size, shape or quantity of the box is best adapted. Unless the production of flied or laced boxes is quite large the hand method is the usual one, but those factories turning out this class of work in large volume have found the machine method to be by far the more rapid and economical.

The finishing operations may consist of putting in trays, partitions, etc., and decorating with ribbons.

The boxes with extended or "French" edges and perhaps padded tops are covered and finished very much in the same manner as just described, but with the additional operations of attaching the extended edges and the cotton padding, etc.

HAND-MADE BOXES.

Of course there are many styles of boxes of complicated construction, such as the very fancy ones and those with hinged lids, falling sides, compartments, etc., so that it is impossible to make them entirely by machine. Boxes of this kind must be made partially or entirely by hand, requiring workers of long experience and often experts in some special operation. This work naturally is the most exacting and yet often extremely interesting and draws upon probably the most expert and experienced box makers in the trade. Many of the silk and satin and hand-painted boxes, seen so often in the confectioners' windows, are real works of art and bring from \$1.00 to \$20.00 each.

REQUIREMENTS AND FACTORY CONDITIONS

We hear much nowadays about vocations, life work, business opportunities and other terms, used by the student of sociology which, in a nut shell, mean to the prospective worker but two things; working conditions and wages. The very nature of paper box making and the uses to which the boxes are to be put demand clean, light, sanitary conditions, and an inspection of the factories in Philadelphia will convince one that our box makers have made or are striving to make conditions in their shops agree with the most modern ideas of pleasant and sanitary working conditions. The manual work of box making is peculiarly suited to the rapid and delicate handling of women and girl workers, excepting, of course, in the cutting processes, which are performed by men and boys. There are none of those disagreeable or objectionable features in box making which in so many kinds of



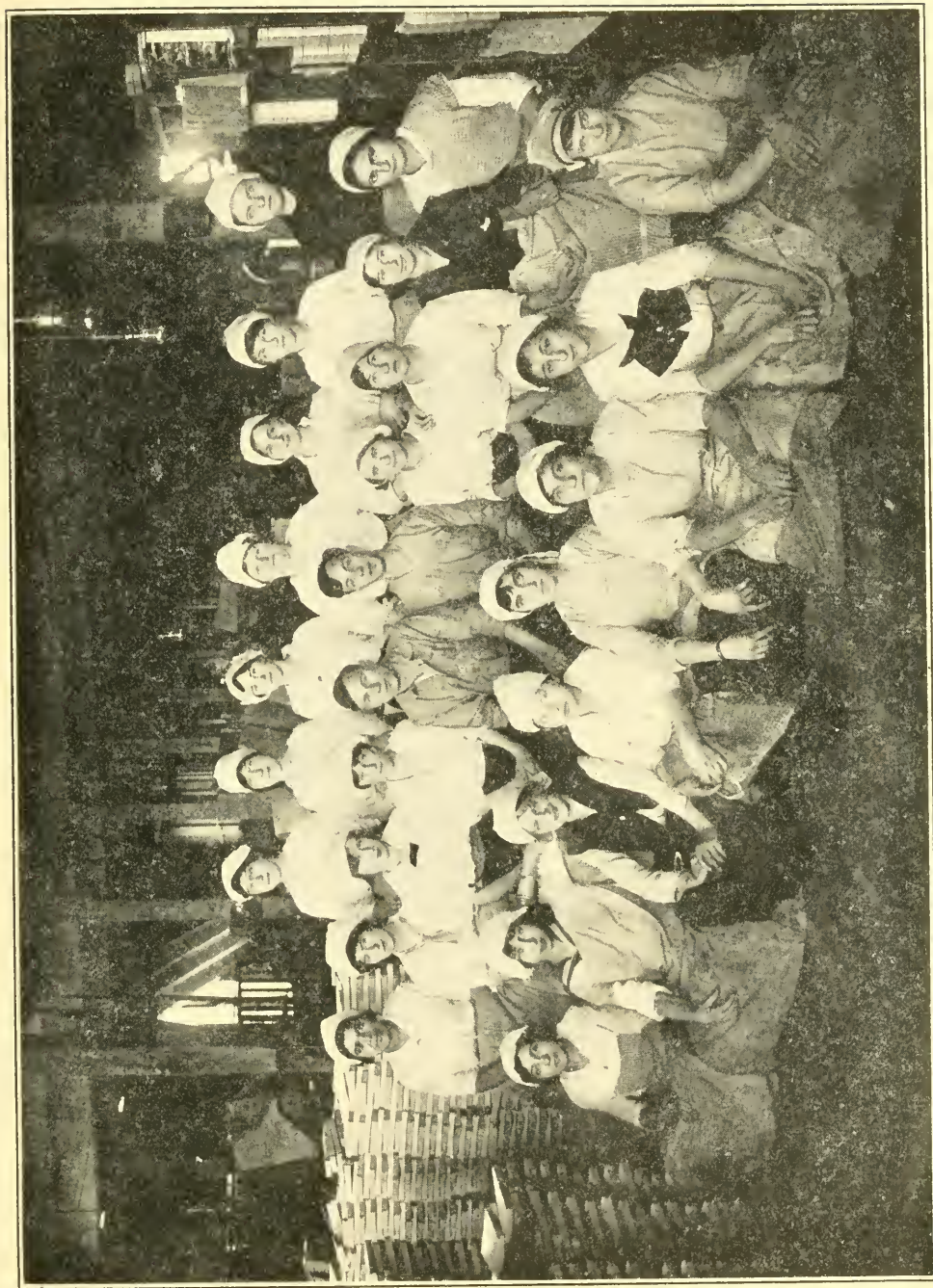


Fig. 4. The shops are conducted in accordance with the most modern idea of pleasant and sanitary working conditions

manufacturing cause the so-called occupational diseases or serious discomforts to the workers, but on the other hand the work is comparatively light and the principal qualifications of a good box maker are speed, cleanliness and accuracy.

Safety has received unusual attention so that a device has now been designed for practically every kind of machine to insure the safety of life and limb under normal working conditions.

Chances for advancement and the wages paid are the equal of those found in the great majority of industries, while the working conditions are good.

In fact, for the ambitious and intelligent worker, who intends to make of his or her work something more than a mere "job," the paper box industry offers many opportunities.



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